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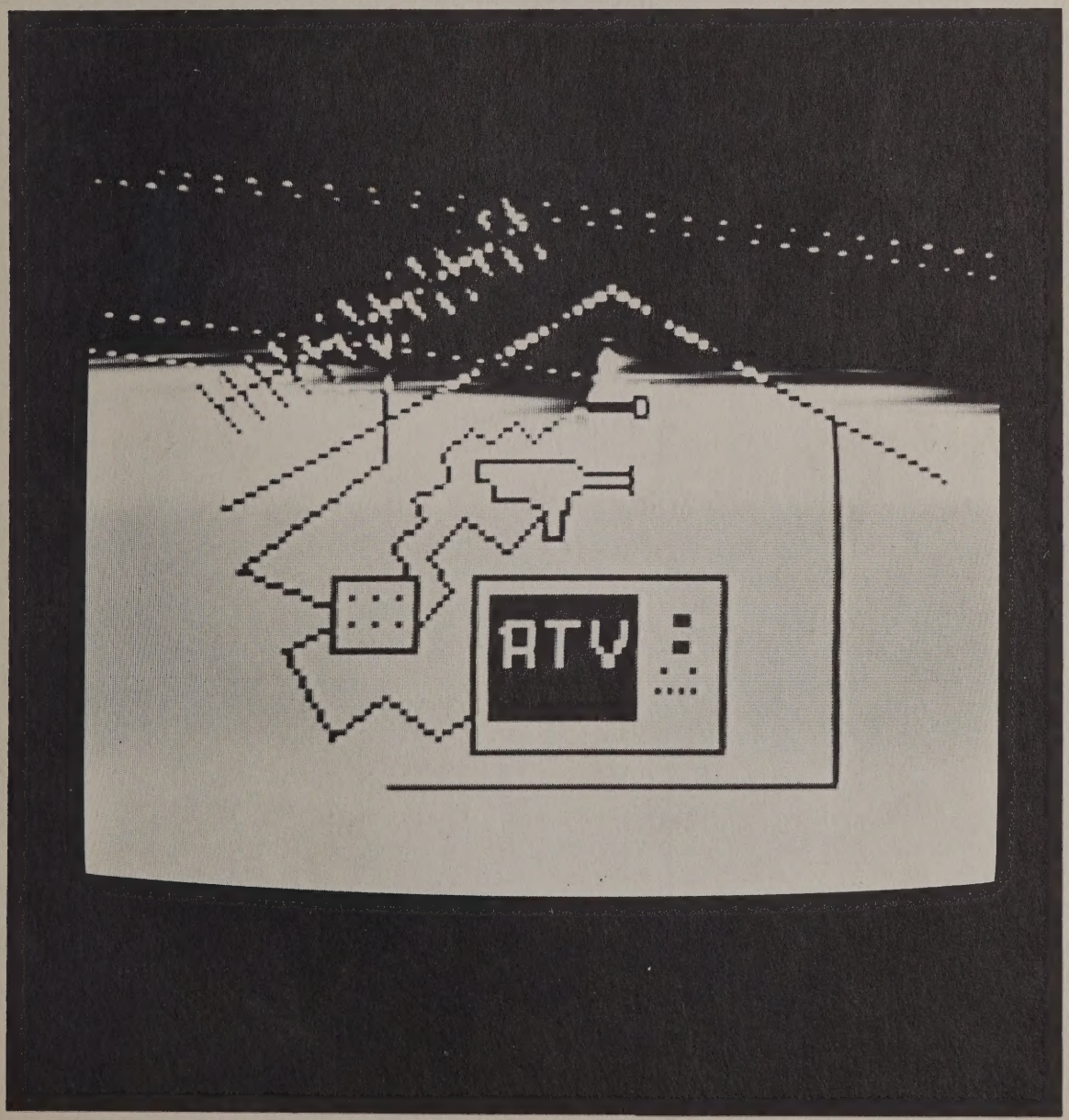
AMATEUR TELEVISION MAGAZINE

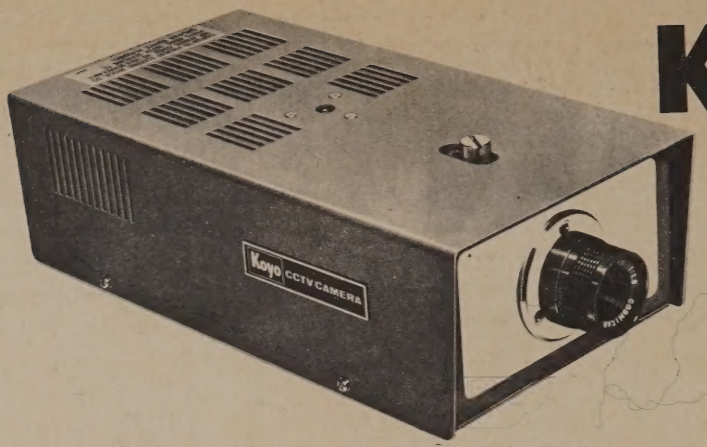
NOV. DEC., 1979

Vol. 9, No. 6

SEASONS GREETINGS



ATV COMPUTER VISUALIZATION by JANE VEEDER



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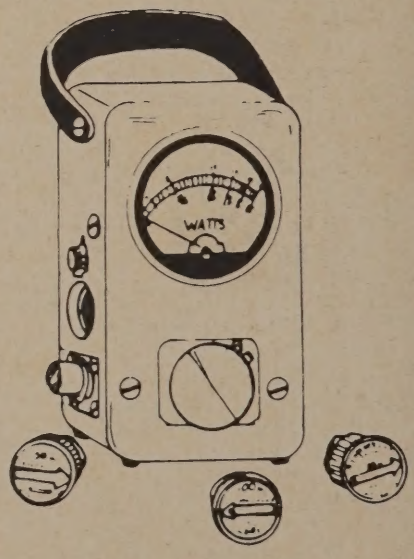

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NEWS

Well, last issue was a real block buster. This one, a bit smaller. Dave Ingram is on vacation, so we will not have his SSTV column this issue, but he will be back next issue.

A lot of activity, so right into the gossip! Tom Burt WB2FUY of Manlius, NY reports he is assembling a station and is trying to get activty restarted in the Syracuse area. James Parsons K5ROV writes to say that ATV is doing well in San Angelo, TX. Jim and friends are using PC Electronics boards and looking for power amps and skeds on 80 or 40 with other west Texas ATVers. 915-653-9854. Gerald Cromer K4NHN of Cayce, SC writes to say that he has been on for 15 yrs and built his first camera 15 yrs ago using an ATV Research kit. He has 2, DX-420's hardline, CMU-15 Scienceworkshop converter and MPSH83 preamp. Gerald also reports on giving an ATV demo at the local club meeting and since then several more stations in the area are on or in the process of getting on. To answer his and perhaps other's question, yes, clubs can buy bulk amounts of ATV in a Nutshell at discount to resell to members, or include with memberships.

DX ALA CANADA! John VE3CYC writes. "On the night of Sept. 4th, all hell broke loose on ATV. At 8:30 PM VE3IWP who lives in Toronto informed me via two meters that W9ZIH from Chicago was comming in on his screen. I fired up my TV station and sure enough, there he was! I just couldn't believe that I was receiving an ATV picture all the way from Chicago, IL. ABout 420 miles away while my normal range is about 70-80 miles. Ron was working VE3EYR in Brantford, ONt. After that contact he worked W3POS in Eria. At 10 PM I got hold of W9ZIH myself. We worked both ways live on camera as well as sound. He received me P-4 and I received him P5 (broadcast quality). I nervously took some pictures and made a video recording for future reference. W9ZIH was on for several hours not just a few minutes as might be expected. VE3EYR, VE3IWP and myself were in contact with each other on 2 meters. There were times when I would alsomst lose Ron, and VE3IWP who is 50 mile miles from me would see him P5, other times it would be reversed. AFter finisheding with Ron W9ZIH, I worked N9AB in Mundeline, IL about 440 miles away. We only flashed our logos at each other for a while, his signal was P2. We also saw K9KLM from Oak Creek, IL at P-3. Later, W2RPO in Lockport, NY, VE3AHS in Welland also say W9ZIH. My converter and preamps are home brew. Ron runs 500 watts video, 150 W audio and 107 elements at 65 feet. I run 40 watts video and 10 watts audio to 48 elements. I have been a ham since 1959 but after the initial excitment of the first several years wore off, I lost interest in the hobby. After getting involved in FSTV I got my old spirit back again. There is no better way that I can think of for old timers who are getting stale to rejuvenate the interest in our wonderful hobby, ATV has got all the excitment of the early days of radio, with lots of room for experimentation." Good work John!

Refering to the schematic inthe last is issue for Robot mods, the resistors shown on the transistor base will vary depending on the type of device you use. I used a 2N2222, and the values aee, 56K base to B+ 2K base to gnd. The diode in the emitter is an LED (sync indicator), not just a loose part! The IC I used is a 7404, quad inverter. +5 to pin 14, gnd to pin 7, pin 9 input pin 8 output.

Questions on the 100 watt conduction cool ed amp. Cavity dimensions are not critical, plus or minus 1/4" on big stuff is OK. Length can vary as much as 1/2". Wall thickness of 3/16" is for heat conduction, could be thinner or thicker, as long as you conduct heat away. Feedthrough caps and socket were Erie. Used silver solder to solder brass pieces together, but good R-TV s-lder is OK too if you use a good heat sink, otherwise it could slowly melt from the heat, particularly on the center pin which connects the tube anode to the base of the cavity. Silver plate? Use the rub on white crystaline stuff, comes in a small plastic tube from supply houses.

T-282. Looking for one? Many of you are according to mail box. Try: G. W. Baumgartner KAØESA, 8932 Victoria Rd. Springfield, VA 22151.

TV EQUIPMENT GOODIES CANADA Brian Smith VE3 IEU of 33 Todd Rd. Agincourt, Ont. Canada (Toronto) M1S 2K2, 416-291-8199 has a garage full of cameras, monitors, tubes, cables, meters, supplies, amps, sync gens, and more lenses. zoom and fixed. The list he sent me is four typewritten pages! Send SASE or visit, or call.

LENSES I advertised in the last issue are NOT C mount, if you adapt to 1" vidicon, multiply the FL by 2.5 for effective focal length (ie 400mm becomes 1000mm, for those real telephoto shots. They are for cameras which have mechanical focus in the camera. Cheap, good, if you mod or adapt. Henry KB9FO.

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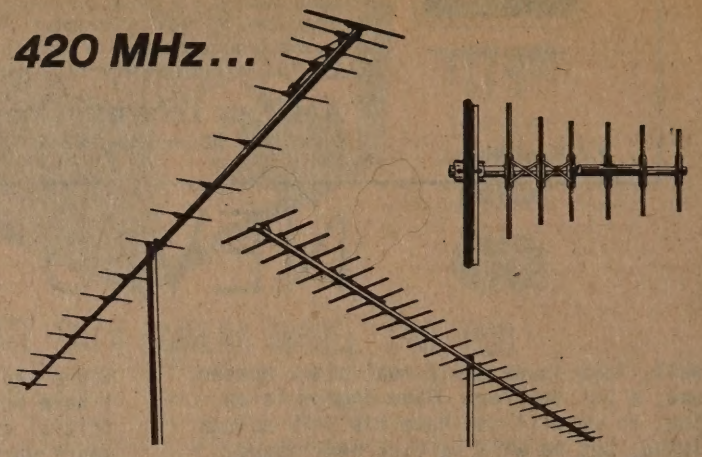

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KLM-420-470-14 $31.95

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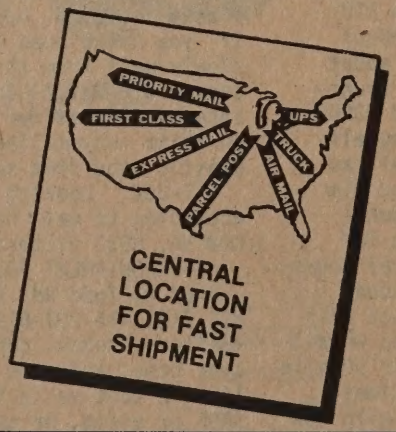

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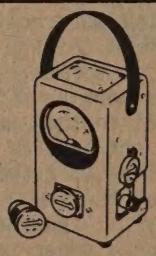

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SSTV IDEAS

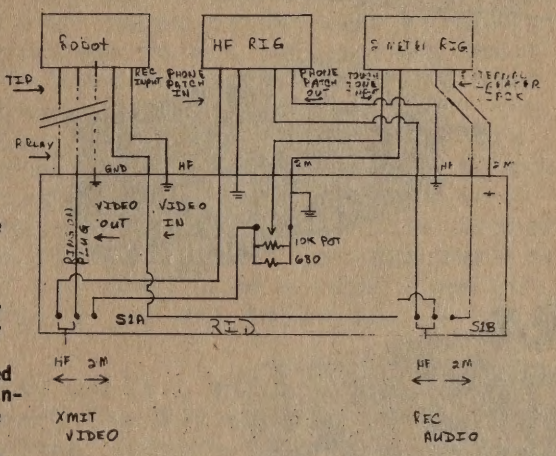
WBØQCD writes: One rpoblem always exists when transmitting "live" camera shots be it FSTV or SSTV. The expense and waste of cardboard signs. billboards and drawing paper used in CQ's, ID's info and general messages. Bring also active in RTTY, I find that the use of TTP paper rolls hung over the camera shooting surface becomes not only handy to use with continous roll pulldown for each progressive message frame, but on a use per cost basis becomes very sconomical way to complete an all around ATV station setup. The width and color texture of this paper is video perfect and rolls of TTP paper can be purchased at local hamfests from $1 to $2/roll. Onw roll will last for months. Check it out with your buddy on RTTY!

Tried 10 meter SSTV at 28.680 Mhz lately? WBØQCD, Mike Stone at Lowden, Iowa reports over 200 SSTV QRP (20-40 W) contacts and 25 countries logged since June of 79. DX includes KZ5, KP4, ZD ZD8, LU4, ZL1, 5NØ, Zs6, PY2, DL8, F9, I3, YU3, JA3, LZ1, 4Z4, G3 and TR8. Certainly a lot of QRM free A5 on 10 meters!

Mike also writes in yet another letter, of the International world wide ATV operator TIC TAC TOE SSTV Tournament. Using successive frames to show the moves, LU4DGN and WBØQCD took 2 hrs, 28 minutes to finish a "draw" game. Seems the Argentine atation kept taking advantage of Mike by distracting him with pictures of "Miss January, Miss Beacon Falls", to distract mike. Argentina may dominate world cup competition in this event!

Daniel Nevels WD5ETR writes: When I was hit by the A5 bug about a month ago, all the SSTV activity was on HF frequencies. Lately SSTV activity has gdown on our local 2 mtr repeater. I finally decided to put together something to eliminate all of the inconvenience of switching between the HF rig and the 2 mtr rig. I worked with a number of circuits and finally came up with this one. The Robot Interface Device (RID) main purpose is to enable the user to switch between an HF rig and a 2 mtr rig for SS activ activity with the flip of one switch. The circuit is very simple to construct. The 10K pot in parallel with the 680 ohm resistor is for the 2 mtr rig. It serves as a level control for the cideo signals. This will also help match the hi Z of the Robot to the low Z of the 2 mtr rig, If one's 2 mtr rig has a hi Z input, you may leave these out altogether. The rest of the circuit is just wiring the switch to the jacks. Try the RID to rid one's wire mess and switching problems.

8/21/79 Robot Interface Device
By Daniel L. Nevels, WD5ETR



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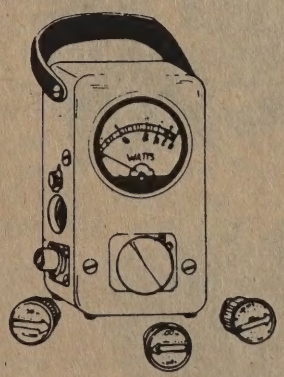

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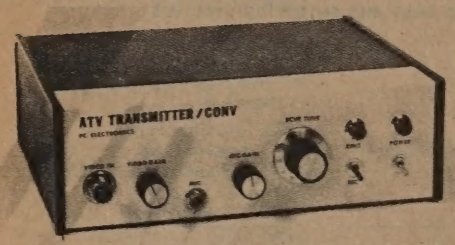

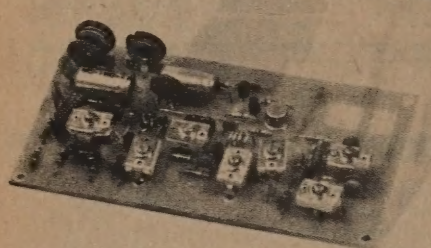

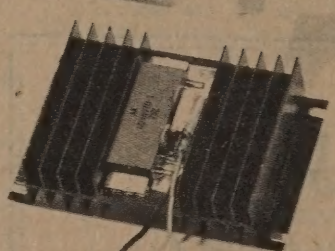

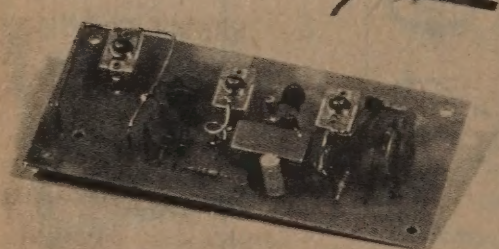

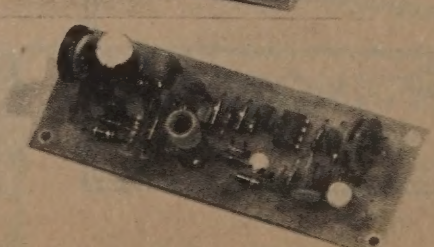

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TXA5-2 ATV EXCITER . . . . . $69.00 ppd
This is a wired and tested module designed to drive a Motorola MHW-710 power module to 10 watts output. (The MHW-710 is part of the PA5 module below). The TXA5-2 consists of a crystal oscillator operating in the 100 MHZ region to keep any harmonics out of two meters, two doublers and a final. The high resolution video modulator (8 mHz) drives both the final and 2nd doubler for good linearity. Also DC restoration is used to give max power on sync tips and black blacks regardless of picture average level. Requires +12 vdc reg @ 70 ma, and crystal.
Crystal: International type 473160, 434 = 108.5, 439.25 = 109.8125 mHz.

PA5 10 WATT ATV POWER MODULE . . . . . $79.00 ppd
The PA5 will put out 10 watts of high resolution video when driven by the TXA5-2 Exciter or VHF ENG. TX-432B (attenuated down to 80mw). With this module and a good gain antenna up 40' you can see pictures usually from any station you can work on two meter FM running 5 watts.
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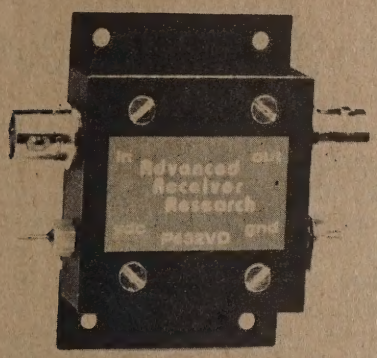
CLUBS AND GROUPS CAN GET A 10% DISCOUNT ON 5 OR MORE OF ONE MODULE ORDERED AT ONE TIME TO ONE ADDRESS.....NO MORE EXCUSES GET ON ATV!!

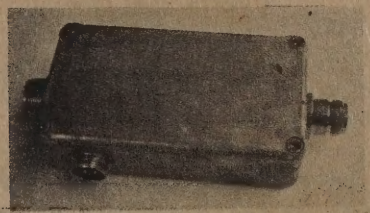


ARR P432VD UHF PREAMP.....$28 ppd
If you are still using that converted UHF TV tuner or Science Workshop varactor tuner, you are at least 6db less sensitive than you need be. Thanks to mass production of the Motorola MRF901 transistor, the price of low noise preamps is now worth while. Noise figure is a nominal 1.8 db. some have measured as low as 1.1db. See the weak ones! If you dont have a converter yet, the TVC-1B has one built in.

BUILDING A ATV REPEATER????

We have all the modules for you to build a successful one. We even have a repeater control board for $99 that has a lot of extras on it....a 4 second alternating control for the video identifier so that your call alternates with the word repeater.... a circuit that works with the video clock board that puts on the screen a number form 1 to 99 that corresponds to the repeater receivers agc voltage so that stations can tell how well they are hitting the machine or how much more gain a amp or antenna is getting. There is a horizontal tone decoder gated with a setable agc trigger point for turning on the repeater only when the signal is video modulated...this keeps non video signals such as radar, FM, etc from tripping the machine on....and you can set the length of time for a external test pattern to come up after a user unkeys the transmitter. This way a color bar gen such as the Heath IG 5240 can be automatically come on the output for testing for say 1 min.

SEND A SELF ADDRESSED STAMPED ENVELOPE FOR REPEATER INFO.



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73, TOM W6ORG P.C. ELECTRONICS, 2522 PAXSON LANE, ARCADIA, CA 91006

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THE COAXIAL CABLE LINK

Connecting the LNA to the receiver is a job for a relatively special 'coaxial cable commonly found in two-way radio communications system. This is done with a cable that is capable of carrying these super-high-frequency signals (i.e. microwave) without severely degrading or attenuating them. Regular coaxial cable, such as is used for CB (or Ham radio) installations is not adequate! The cable size is 7/8th's inch and the 'impedance' is 50 ohms. The 'insulating material' inside the cable jacket is 'air' with a thin spiral of plastic to keep the inner conductor in place and from touching the outer 'shield'.

Most suppliers will cut a length of this to your specifications and prepare it with the special (type N) connectors required. Calculate (measure) how much you require to reach from the LNA to the receiver, and order that amount. Order it with type N female connectors on both ends as you will use a short (1-2 foot) length of RG-214-A/U cable with type N male connectors on both ends to connect the antenna end to the LNA, and the receiver end to the receiver. This heavy 7/8th's inch cable cannot be bent sharply and to connect it directly to a piece of equipment without being careful to support the heavy weight is a good way to 'bust' out the fitting on the equipment proper.

This cable, if ordered with a poly (protective) jacket, can be direct buried and forgotten.

If you wish to operate two or more receivers simultaneously from the same satellite antenna, this presents no special problems. What is required is a device to go onto the antenna cable line at the receiver end which 'splits' the signal (voltage) up into two, four or eight 'equal' parts. While it may not make alot of sense, the truth is that you can split the signal up several times and still have perfect pictures on each satellite receiver. The splitting device is called a 'coupler' with a two outlet 'coupler', a four outlet 'coupler' and an eight outlet 'coupler' commonly employed. The coupler fits directly onto the receiver end of your 7/8ths inch coaxial line and then from that to each receiver you connect a short length of RG-214-A/U

cable with the appropriate type N (male) fittings (a fitting is another word for connector).

Sources for cable and 'couplers' follow:

1) Andrew Corporation, 10500 W. 153rd Street, Orland Park, Ill. 60462 312-349-3300 (cable, fittings)
2) Decibel Products, Inc., 3184 Quebec, Dallas, Texas 75247 214-631-0310 (cable, fittings)
3) Merrimac Industries, Inc., 41 Fairfield Place, W. Caldwell, N.J. 07006 201-575-1300 (signal couplers)
4) Prodelin, Inc., 1350 Duane Avenue, Santa Clara, Ca. 95050 408-244-4720 (cable, connectors)

THE RECEIVER

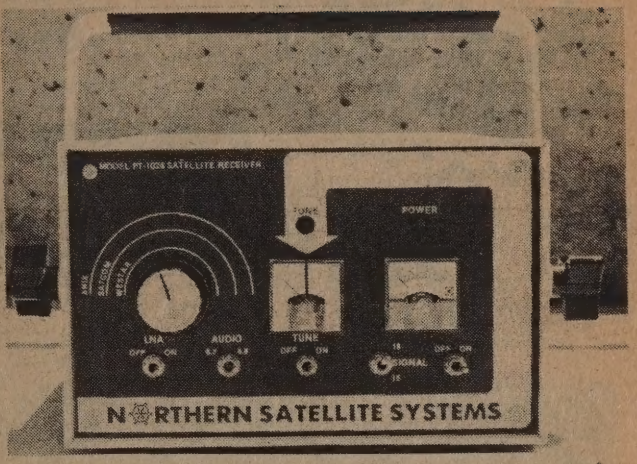
To the uninformed the receiver may seem to be all that is really required. However if you have read carefully to this point you can see that there is more to receiving satellite television signals than simply having a special receiver.

Receivers, like other portions of the receive system, have undergone considerable change in the past two years. The first receivers installed by cable TV systems cost $10,000 or more each. Many CATV type receivers are still expensive ($6,500 to $7,500).

There are generally speaking two categories of receivers available. The so-called

Satellite TV Handbook

single-channel receiver is the least expensive of those available. Cable TV companies find this a cost effective receiver because typically they will install such a receiver in their system and leave it on one particular satellite channel 24 hours per day, all year long. Some single channel receivers can be 'field tuned' for another channel, but none can be quickly tuned to another channel. In the CATV world single channel receivers sell in the $2,900 to $4,000 price range.



FIRST HOME RECEIVER—developed was produced for the Canadian private or home market by Whitehorse (Yukon) company called Northern Satellite Systems. Receiver features continuous tuning over all 12 or 24 satellite channels, switchable audio (sound) for the two audio formats (SATCOM and WESTAR/ANIK) and (relatively speaking) low price; around $2,600 in U.S.

The other type of receiver is known as a tuneable receiver. This means it can be tuned by the user through all 12 (or 24) of the satellite channels. Tuning is usually accomplished by turning a knob, pushing buttons or some combination of the two. There are both 12 and 24 channel tuneable receivers. The 12 channel will cover all of the ANIK (Canadian) channels, all of the WESTAR (Western Union) channels and 12 (1/2) of the SATCOM (RCA) channels. In the CATV marketplace these receivers sell in the $4,000 to $5,500 range. The 24 channel receivers will tune everything there is to tune and with one exception they sell in the $4,500 to $7,500 range.

That one exception is the Northern Satellite Systems receiver developed primarily for the Canadian marketplace (although it is now available in the United States). This receiver (see photo on page 38) is the first really designed-for-private-terminals satellite TV receiver. It tunes all 24 channels, has an LNA powering jack, meters to aid in tuning, and switch-selectable sound (audio) for the different audio systems found on some WESTAR channels. (Note: Most satellites use the same audio system. The one exception to this is WESTAR I and II where some of their occasional video channels utilize a special audio frequency. Without this switch-circuit on your receiver you would, on these WESTAR channels, find perfect pictures but no sound. All other SATCOM, ANIK channels use the same audio format.) The price on this private-market receiver is in the $2,600 range in both the U.S. and Canada.

Why do some receivers cost so much more than others? Primarily the design approach. Many receiver manufacturers design receivers that will meet or exceed so-called "broadcast standards". That is, receivers which meet very exacting FCC requirements for use in broadcast television systems. Such receivers typically have no better 'performance to the eye' than less expensive receivers but engineers with suitable test equipment can measure the extended performance of such higher priced receivers. In the cable television marketplace the very biggest cable systems purchase the very highest priced receivers because they have tens of thousands of customers to serve from each receiver. Smaller cable companies buy the less expensive receivers because they have fewer customers and less demanding situations.

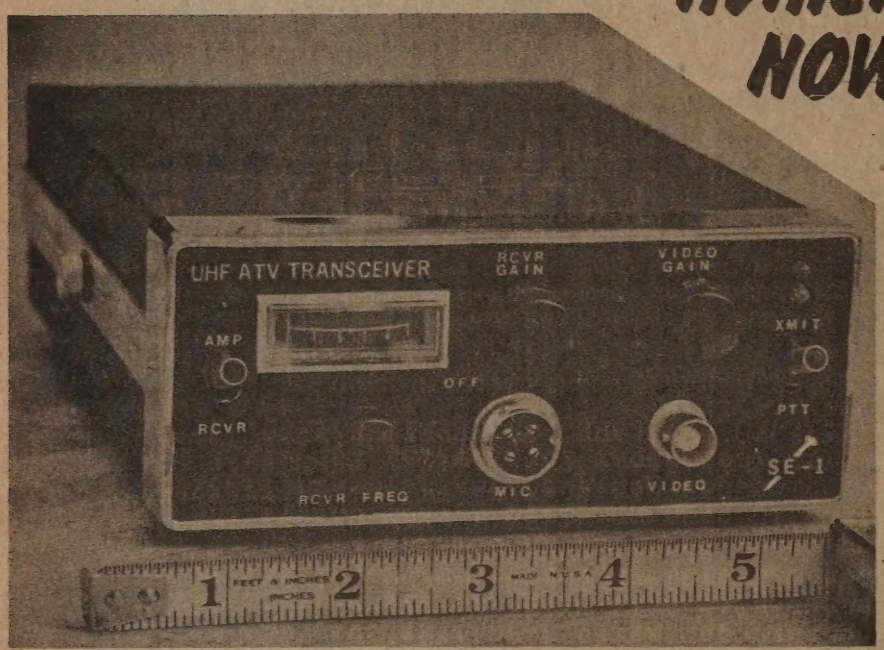
As far as 'sensitivity' and other important receiver parameters, the receive system LNA and the receive system antenna have a much greater bearing on the way your system works than the receiver selected. The best receiver available will not produce a good quality picture if the LNA or antenna are shoddy.

NEW!

ANOTHER FIRST FROM:
SCIENCE WORKSHOP
Box 393, Bethpage, N. Y. 11714

COMPACT, MOBILE OR FIXED - ATV TRANSCEIVER!

AVAILABLE NOW!



COMPLETE

Just plug in Camera, Ant. & Mic.

****

Works with any T.V. rcvr.

****

Runs off your 12 volt pwr. supply or car battery.

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Supplied with pwr. plug & cable, mic. connector & mobile mtg. bracket.

INTRODUCTORY PRICE
ONLY 349.95 + 3.50 SHPG.

TRANSMITTER

- 10 WATTS PEAK VIDEO POWER!
- BANDWIDTH FOR COLOR TV!
- CARRIER OR SUB-CARRIER AUDIO! MOBILE OR FIXED!
- 439.25 MHZ CRYSTAL (XMT.) SUPPLIED!

RECEIVER

- TUNES 425 MHZ THRU UHF CHANNEL 20!
- 2 TRANSISTOR LO-NOISE PRE-AMP
- 3 TRANSISTOR, VARACTOR UHF CONVERTER! FULL R.F. GAIN CONTROL!

ALL THIS IN A COMPACT 9½" X 5½" X 2½" PACKAGE!

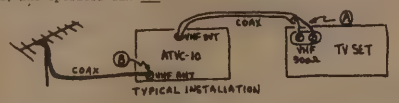
FRONT PANEL CONTROLS:

AMP/RCVR sw. AMP. - meter reads xmt. current. **RCVR.** - reads varactor voltage.
RCVR. FREQ. - Rcvr. tuning
MIC. A.F. input (connector supplied).
RCVR GAIN/OFF. - R.F. Gain, Pwr. On-Off.
XMIT/PTT SW. - **PTT** - SW. ON MIC. CONTROLS XMIT/REC.
XMIT - OVERIDES SW. ON MIC.
VIDEO GAIN - adjuts video level.
VIDEO - BNC 75 camera input.

TUNABLE AMATEUR TV CONVERTER

ATVC-10

By connecting a UHF antenna to the input of the converter, and the output of the converter to the VHF antenna terminals of any TV set, the operator can see what the local hams are doing on a TV.



The circuit consists of a low noise, high gain RF amplifier stage with Varactor tuned input and outputs, an active (transistor) mixer stage with Varactor tuned input, and a Varactor tuned oscillator stage. Uses 3 transistors and 4 Vari-cap diodes. RF gain is adjustable.

The built-in AC power supply uses a transformer for power line isolation and 4 diodes in a full wave bridge. The supply voltage for the 4 tuning Varactors is regulated. The converter tunes electrically (no moving parts) from 420 to 450 MHZ and outputs on CHANNEL #3.

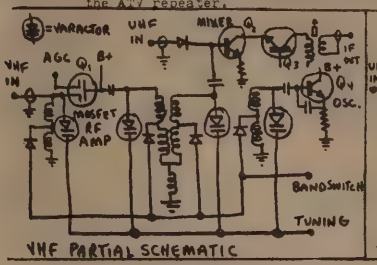
Note: From ARRL Specialized Communications Techniques.

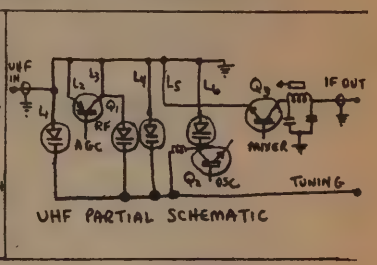
"Tunable converters are preferred over the crystal controlled variety, for several reasons. ATV is normally A. M. with two sidebands, rather than the carrier-and-one-sideband of commercial T.V. For the clearest picture it is helpful to be able to tune off to one side or the other of the ATV carrier, depending on the shape of the receiver i-f Pass-band, and local occupancy of the lower vhf TV channels".

The ATVC-10 comes completely wired & tested & guaranteed for 2 years. It is housed in an attractive 2 tone (walnut & beige) finished aluminum cabinet, only 1 7/8" X 4 1/4" X 4", with Full instructions Only $59.95.

UHF/VHF VARACTOR TUNERS

The two tuners described below tune electrically (no moving parts) from approximately 50 MHZ to 1 GHZ (with a few gaps in-between). They are both HI-GAIN, LO-NOISE, STATE-OF-THE-ART tuners. They were manufactured for one of the leading manufacturers of Solid State Color T.V. They differ radically from conventional tuners since they are VOLTAGE tuned, rather than mechanically tuned. They both have double-tuned R.F. amplifier stages (a dual gate MOSFET in the VHF tuner). These tuners, in addition to their improved gain, noise and selectivity-provide increased tuning range (above and below conventional T.V. tuners) through the use of varicap diode tuning. This makes it practical to use the UHF unit to tune the 420-450 MHZ ham band with no modifications. Similarly, the VHF unit can be made to tune the 6 meter, 2 meter and 220 MHZ ham frequencies. Connecting the UHF unit in place of the conventional one in our TV set here in Bethpage, we were able to pick up the local ATV hams and the ATV repeater.





The frequencies that the tuners were designed to cover in their normal application are:

VHF 54 to 89 MHZ and 174 to 216 MHZ
UHF 470 to 890 MHZ

Varying the Varactor tuning voltages above and below those used for tuning the VHF & UHF TV channels provides the additional coverage into the adjacent ham, public service, etc. frequencies. Isolating the tuning voltage to the oscillator varactor offsets it to produce IF output frequencies other than the 45 MHZ Video IF normally used. We have been able to output at frequencies from 20 to 200 MHZ!

These tuners have been successfully adapted to provide specialized, hi-quality receivers and converters over a wide range of frequencies - as well as in other diversified applications (such as the spectrum analyzer described on the opposite page). Also, as tuner-subbers, remote control tuning (a la Jerrold), mast-head converters (convert 450 MHZ at the antenna and come down with 45 MHZ to eliminate UHF transmission line losses), telemetering receivers, etc. They are supplied with diagrams for typical applications and sold with a MONEY BACK GUARANTEE.

Prices: UHF --$7.95 ea. (2-$15)
VHF --$19.95 ea.
Combination (1ea. UHF/VHF) $24.95

Cat.#102 RCA SOLID-STATE VHF POWER AMPLIFIER

Commercial, mobile 150-170 MHZ, brand new, completely enclosed 9"X 2½" X2" package. Contains driver & stud mtd. power transistors, metering leads, solid state T-R switch & Lo-pass output filter. 100 MW in, 6-8 Watts out @ 13.8 Volts. Schematic & 2 Meter conversion instructions included. Only $9.95.

Cat.#116 SYLVANIA MODEL 100 CATV-VHF TRUNK AMPLIFIER MODULE.

Specs: 50-270 MHZ 0.2dB, Adjustable gain = 18-31 dB, Adjustable slope =13dB, Power req.= 360 ma. @ 24V. D.C. Size=8½"X 1½"X 2 3/4" Has 5 stages of TRW ("windmill" style) R.F. power transistors. Typical noise figure at Chan. 13=9 dB. Covers all VHF-TV channels, 6 & 2 meters, VHF aircraft, public service, commercial F.M., etc. 75 ohm input & output, type "F" connectors. With Schematic, only $9.95.

Cat. #104 PRECISION DIGITAL MEDICAL ELECTRONIC THERMOMETER.

Made for hospital use -cost approx.$300.00 Range from 90.2°F to 106.9°F. Press & release button. Decimal point LED lights. After 35 seconds, warning beep signals temperature will be displayed for 10 seconds. Flashing decimal point indicates low battery, time to recharge. Shuts down automatically before lower voltage can affect accuracy. Contains 11 I.C.'s, 25 transistors, 20 diodes, audible alarm & 4 seven segment PIN-LITE displays. All parts have standard (2N,etc.) numbers. Can be used for it's original purpose or as the basis of many electronic devices. Substitute a carbon monoxide variable resistance sensor for the thermistor probe (data supplied) and tune your car! Operates on 6V. D.C. Complete P.C. board (as is) $6.95, (tested) $9.95. In alum. case, add $2.95. Thermistor probes (with coil cord & plugs) $2.75 ea. Charger base $5.95.

With schematic & instructions for possible modifications.

Cat.#105 AS-IS 12" SOLID STATE T.V. P.C. BOARD

Contains Video & Sound I.F., Sound det. & output, sync, AGC, video, Hor. & Vert. osc. & Amp., H.V. Xfmr, controls, CRT socket etc. W/ schematic. Approx. 6"X 8". Great for ATV'ers, Decoders, etc. Only $9.95

Cat.#106 DIGITAL TV GAME BOARD

Brand new, tested. Contains 95 standard TTL IC's (no house numbers), Xtal (16.128 MHZ) clock generates standard composite video & sync, character generator & counter circuits produce numbers. Sound effects circuits generate ping-pong sounds. No schematic. 5V. 2A. on board regulated supply. Just add filament transformer & paddle controls. Hook-up circuit & instructions supplied. Measures 9" X 17". Only $7.95.

Cat.#107 AUDIO OR R.F. OPERATED RELAY BOARD

Monitor your favorite repeater (or CB channel) while listening to radio (or stereo). Speakers (1 or 2) are switched from radio to your rig when this electronic marvel senses audio from your rig. Holds it as long as there is audio & then returns it to normal operation. Also mutes the radio while transmitting, automatically eliminating the need for switching one unit on and the other off (senses R.F.). Operates on 12V. D.C. Instructions supplied. Brand new, only $4.95

Cat.#108 RCA REGULATED DUAL SUPPLY

Two independent 150 ma. supplies, each adjustable from approx. 6 to 9 volts. Can be combined to supply 12 to 18 volts. Very low ripple. 9 transistors & 7 diodes. Transistor switched "power-on" light. Beautifully built, approx. 11"X5"X2" alum. package. 3 fuses. Instructions supplied, brand new-only $14.95

Cat.#109 NEW ATV BOOK "ATV IN A NUTSHELL"

Everything you need to know to build & operate your own HAM TV station. Over 60 schematics, figures, diagrams & photos. Only $5.00

Cat.#110 NARROW BAND F.M. CERAMIC FILTER SET.

Consists of 1- 10.7 MHZ filter and 1- 455 KHZ Ladder Filter, as used in the E.F. Johnson UHF/VHF Scanner. Supplied with scanner schematic showing how to use them. Also ideal for "advanced spectrum analyzer" application, etc. Set, only $9.95

Cat.#111 MAGNOVOX VIDEO I.F. STRIP

State of the art- MOSFET I.F. module. Ideal for building "off-the-air" T.V. monitoring & conversion receivers, etc. when used with our varactor tuners. With schematic, only $19.95 Great for T.V. Decoders!

Cat.#112 ATV/UHF CONVERTER MODULE

New. UHF Varactor tuner, as modified for use in our ATVC-10 Tuneable ATV Converter. Input 420-450 MHZ. Output TV channel #3 (61.25 MHZ). Modified, tested & aligned-with instructions-$19.95 Use as down converter for TV Decoder! (Tunes 420 to 900 MHZ!)

Cat.#113 ATV CONVERTER REGULATED POWER SUPPLY KIT

New. P.C. board and all parts to build regulated supply to power the ATV/UHF Converter Module. Includes trim pots for R.F. Varactor tracking & AGC, AC transformer, 3 terminal regulator, diodes, resistors, capacitors, etc. with instructions: $12.95

Cat.#114 COMBINATION CONVERTER MODULE & REG. PWR. SUPPLY KIT

Consists of Catalog #112 and #113. Only $29.95

NOTE: New I.F. strip for Spectrum Analyzer Kit in the works- old one sold out. Watch A5 for availability. Medium scan ATV strip also coming.

HOW TO ORDER:

Send check or money order - add $1 to orders under $15. or 5% over $15 for shipping. N.Y. residents add tax. COD OK, need street address for UPS. Satisfaction guaranteed. Our products may be returned within 10 days for a full refund (less shipping).

SCIENCE WORKSHOP
Box 393, Bethpage, N.Y., 11714

Satellite TV Handbook

A list of receiver suppliers follows:

1) Farinon Electric, 1691 Bayport, San Carlos, Ca. 94070 415-592-4120 (Jim Hurd)
2) Hughes Microwave Communication Products, 3060 W. Lomita, Torrance, Ca. 90505 213-534-2146
3) Microdyne Corporation, Box 1527, Rockville, Md. 20850 301-762-8500 (David Alvarez)
4) Microwave Associates, Inc., 63 Third Avenue, Burlington, Ma, 01803 617-272-3100 (J. Duke Brown)
5) SATCO, Suite 211, 217 S. Stemons, Lewisville, Texas 75067 214-436-1571 (Note: firm handles Northern Satellite Systems private terminal receiver in U.S.)
6) Scientific Atlanta, Inc., 3845 Pleasantdale Rd., Atlanta, Ga. 30340 404-449-2000
7) Scientific Communications, Inc., 3425 Kingsley Rd., Garland, Texas 75041 214-271-3685
8) Terracom, 9020 Balboa Avenue, San Diego, Ca. 92123 714-278-4100
And, in Canada
9) Northern Satellite Systems, Ltd., # 203, 4103 4th Avenue, Whitehorse, Yukon Y1A 1H6 403-667-4247 (Rod Wheeler). Note: See SATCO in U.S.

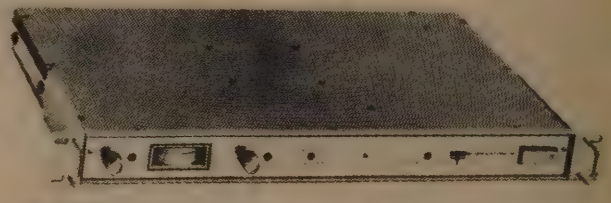
AFTER THE RECEIVER

The receiver, as noted previously, does not have a built in picture tube or speaker. To see the picture and hear the sound you must plug the output of the satellite receiver into either a 'video monitor' or into a TV modulator (which converts the signal back to a TV channel signal your home receiver can tune).

For the highest quality pictures you would want to plug the output of the satellite receiver (labeled video for picture and audio for sound) directly into a 'TV / video monitor'. This is a piece of electronics such as you find in TV production studios; a highly refined picture tube and speaker where the emphasis is on very high picture definition or quality. Such a monitor costs from $500 to $1,000 in the color format. However when you have such high quality television coming to you, for the one special room in the house where you will watch your satellite reception an investment in a reasonably high quality color monitor might be worth considering.

This is a simple connection to make; the video output on the satellite receiver connects to the video input on the monitor; the audio follows the same (marked) path. Most monitor typically will also have a ('loop through') video (and audio) output on it. This means you can run the video into and through it on to a TV modulator.

The TV modulator is really a (very) low power TV transmitter. It accepts video (picture) input and audio (sound) input through two connections/plugs. It turns this video and audio into a full TV signal on the design channel you wish (i.e. channel 2, 7, etc.).



TV MODULATOR—because signals produced by typical satellite TV receiver cannot be directly hooked to standard TV receiver, an 'interfacing unit' known as a TV MODULATOR is incorporated into the system. Unit takes separate picture (video) and sound (audio) signals from satellite receiver and turns them into standard TV signal. Side benefit is that output signal from TV modulator can be 'shared' through thousands of feet of coaxial cable with neighbors without additional equipment required.

Rather than connecting the output of the TV modulator to a (transmitting) antenna to spray signal over the neighborhood (illegal!) you connect it to a piece of non-exotic coax-

Satellite TV Handbook

ial cable. Cables such as RG-11/U, RG-59/U and other commonly available 75 ohm cables may then be routed where you wish them to inter-connect to as many television sets as you have on the premises (or off premises if you intend to share the reception with others). A TV modulator is capable of sending a good quality picture through up to 1,000-2,000 feet of coaxial cable without any additional equipment. If you do need to go further than that a 'repeater amplifier' can be inserted into the coaxial line at the appropriate spot and the signal carried on for miles if necessary.

There are all sorts of TV modulators around. For example, the TV game you perhaps already own? Inside that game is a small, not very fancy 'TV modulator'. You (typically) tune your TV set to TV channel 3 or 4 when you use the game and the 'game picture' appears on your TV set. Inside the game is a TV modulator for channel 3, and/or 4.

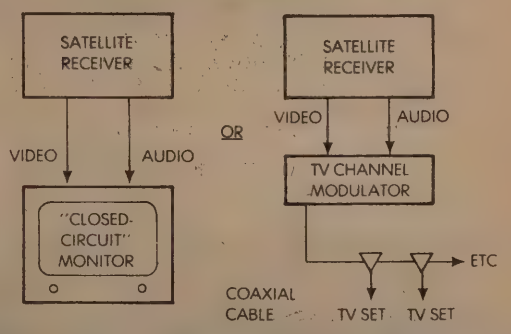
TV modulators can be very simple (as is the case with the TV games) or they can be 'miniaturized TV broadcast stations'. Obviously the price changes as the quality of the modulator upgrades. Because the picture (and sound) quality from the satellite TV receiver is very high it seems unwise to degrade that quality with a poorly operating modulator.

How do you tell a good one from a not so good one?

Price offers some guide. While there are modulators available for less than $500 (some for as little as $50) you should not be interested in a modulator that costs less than $500. The price range you will be shopping is $500 to $1,500. The modulator should have:

1) 75 ohm video input
2) 600 ohm audio input
3) Separate, front or rear panel controls to adjust the "modulation index"/"percentage"
4) A meter or light to indicate when you are 'overmodulating' (i.e. distorting the picture by improper manipulation of the controls)
5) Vestigial sideband filter (don't ask what it is - just trust us!)

PICTURE VIEWING OPTIONS



SIGNAL DIRECT FROM SATELLITE RECEIVER—can be viewed directly on closed-circuit TV 'monitor' (picture and sound) for professional on-location 'TV studio quality', or it can be interconnected to a coupling device known as a TV modulator to allow viewing on one (or hundreds) of standard TV receivers. TV channel modulators are available by specific channel number and receivers connected to it tune to that channel to receive satellite signal.

Because the TV modulator operates on a specific TV channel, you will need to decide what channel you wish your satellite service distributed through coaxial cable on. Normally speaking, select a lower TV channel not in use in your area (i.e. lower means 2-6). On the back of your receiver you can install a simple (Radio Shack type) 'switch' to select between your normal TV aerial and the coaxial cable that brings the satellite signal to you from the TV modulator. When you switch to the modulator service you will simply switch the TV set to the appropriate channel on your TV set (such as channel 3 if that is the channel where your TV modulator works) and there will be the satellite service picture.

MATERIAL PROVIDED COURTESY OF BOB COOPER,
SATELLITE TELEVISION TECHNOLOGY

NEWS RELEASE

Oklahoma City, Oklahoma - October 02, 1979

SECOND SATELLITE PRIVATE TERMINAL SEMINAR SCHEDULED

Miami, Florida has been selected for the second 'Satellite Private Terminal Seminar' (SPTS); to be held February 5,6 and 7 at the Bayfront Park Auditorium on the waterfront in downtown Miami.

Bob Cooper, the creator of SPTS, in announcing SPTS '80/Miami notes that the first SPTS ('79) held in Oklahoma City this past August was a complete sell out with 506 registrants and several hundred more turned away because of a lack of facilities. Cooper expects SPTS '80/Miami to also be a sell-out although the facility will handle twice as many registrants as the Oklahoma City facility held in August.

The emphasis at SPTS '80/Miami will be two-pronged. Continuing the high caliber technical program of SPTS '79, the sessions will include more than 25 technology lecture sessions featuring a 12 lecture 'mini-symposium' conducted by H. Paul Shuch of San Jose City College. Shuch's 12 lecture 'course' teaches all of the fundamentals of satellite technology starting with an understanding of the satellite system itself and working through the complete satellite receive system package. Also on the program will be Professor Taylor Howard of Stanford University who will teach attendees about the design and construction of a low cost (under $800) 24 channel frequency agile satellite television receiver; Robert M. Coleman of Travelers Rest, S.C. who will teach LNA and active GaAs-FET mixer design, and Oliver Swan who has developed a single reflector / multiple satellite 'spherical antenna design' system for simultaneous reception from up to 9 different satellites.

In addition to the technical sessions, there will be special sessions aimed at marketing and selling low cost terminals throughout the western hemisphere including a session detailing how a low cost satellite TV terminal can be interconnected to low cost re-broadcast equipment for local coverage of a ten mile radius area with satellite television signals. Several other sessions, including one conducted in Spanish, will focus on satellite television reception possibilities in the Caribbean, Central and South America.

Pre-registration at SPTS '80/Miami is mandatory. Full information is available from Satellite Television Technology, P.O. Box G, Arcadia, Ok. 73007 (405-396-2574).

U.S. POSTAL SERVICE

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(Required by 39 U.S.C. 3685)

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39 U. S. C. 3626 provides in pertinent part: "No person who would have been entitled to mail matter under former section 4359 of this title shall mail such matter at the rates provided under this subsection unless he files annually with the Postal Service a written request for permission to mail matter at such rates."

In accordance with the provisions of this statute, I hereby request permission to mail the publication named in item 1 at the phased postage rates presently authorized by 39 U. S. C. 3626.

SIGNATURE AND TITLE OF EDITOR, PUBLISHER, BUSINESS MANAGER, OR OWNER
Henry B Ruh Publisher

(See instructions on reverse)

2 FREQING THE TXA5 EXCITER de W6ORG Oct 79

The oscillator and first doubler tuned circuits are too high Q to pass both 434 and 426.25 mHz. To broaden the oscillator just put a 2.2K ½ watt resistor across the oscillator coil L1. It can be most easilly be placed on the copper side of the board.

The first doubler double tuned circuit was designed for critical coupling and can be over coupled to give a double peak on the desired frequencies by placing a 2 pf cap between the two trimmer caps. Carefully solder with short leads and dont let the solder flow under the mica. Arco silver mica 2pf is best or npo ceramic.

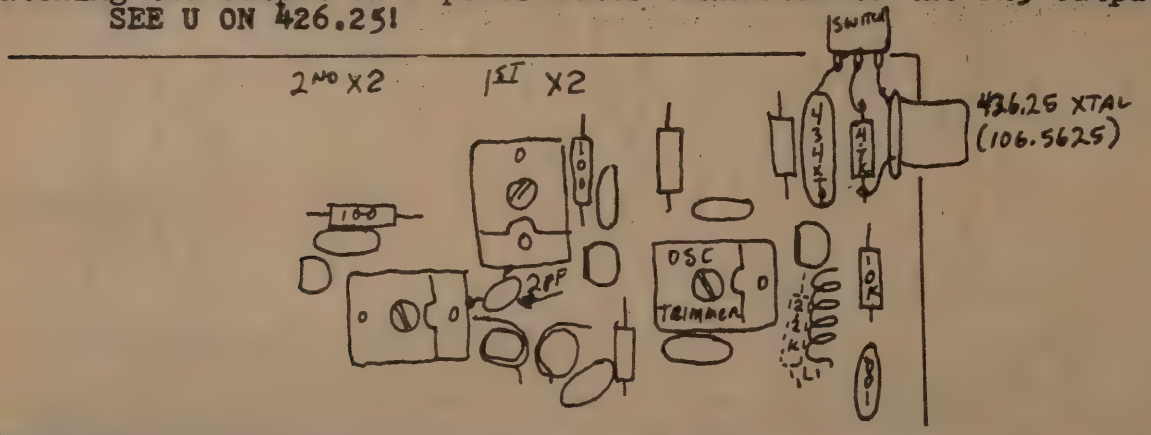
There are two ways to switch the high freq xtals and not lose oscillatàon. Lift the existing crystal ground side out and run to a small spdt toggle switch. The wiper of the switch goes to gnd. Connect the previously grounded side of the 434 xtal to one side of the switch and the other to the 426.25 xtal. Solder the other end of the 426.25 rock to the lead of the 4.7K resistor near the 10K. A good switch is the Radio Shack 275-613. Or u can use a small relay such as the radio shack 275-003. Keep all the leads to no more than ¼" long.

To tune up switch the 426.25 xtal in and peak the oscillator trimmer for max 1st doubler emitter voltage. Check with either a counter or tuneable atv receiver to make sure the xtal is controling the freq. Then check the 434 xtal for oscillation. You may have to touch up the tuning slightly to get both to track.

Next peak the 1st doubler collector trimmer at 426.25 and the 2nd doubler base trimmer at 434 with a voltmeter at the 2nd doubler emitter. Again go back and forth several times to get a voltage reading within 10% of each other as you switch freqs.

The following stages are fairly broad enough but want to favor 434 more than 426 so fine tune by switching back and forth watching the output on a power meter connected to the PA5 output.

SEE U ON 426.25!



Rolph WB6Jkw needs the loan of a manual on a Javlin VC-100 camera. His is sick and needs repair. He needs to make a copy and will return right away...call him on 146.43 or 4452196..17 E. California Arcadia CA 91006.

Ralph WA6OFO just put up a new 56 ft freestanding crank up. We have yet to see what height gain occurs at different levels. He will try 5 ft changes into the repeater and the data will be in the next bulletin.

If u age looking for a free standing crank up tower, Wilson has advertised in the last QST a 61 footer for under $400. They now deal direct only so u save the dealer markup.

ROBOT SSTV MODEL 400 SCAN CONVERTER

ALL SOLID STATE DIGITAL RANDOM ACCESS MEMORY SSTV SCAN CONVERTER

- **All solid state Random Access Memory**
- **Slow-to-fast and fast-to-slow conversion capability**
- **SSTV picture display on any standard CCTV monitor**
- **Frame freeze from any standard CCTV camera, broadcast video or video tape source**
- **Permanent picture storage**
- **Automatic or manual TV frame snatch**
- **Internal gray scale generator precision adjustment standard**
- **Capable of real time display of digitally processed fast scan video**

Now you can operate SSTV by just adding the Robot 400 to your existing station and converting it to your home TV station with a Robot RF Adaptor Kit. And you'll be joining over 13,000 active SSTV'ers in one of the fastest growing activities in amateur radio.

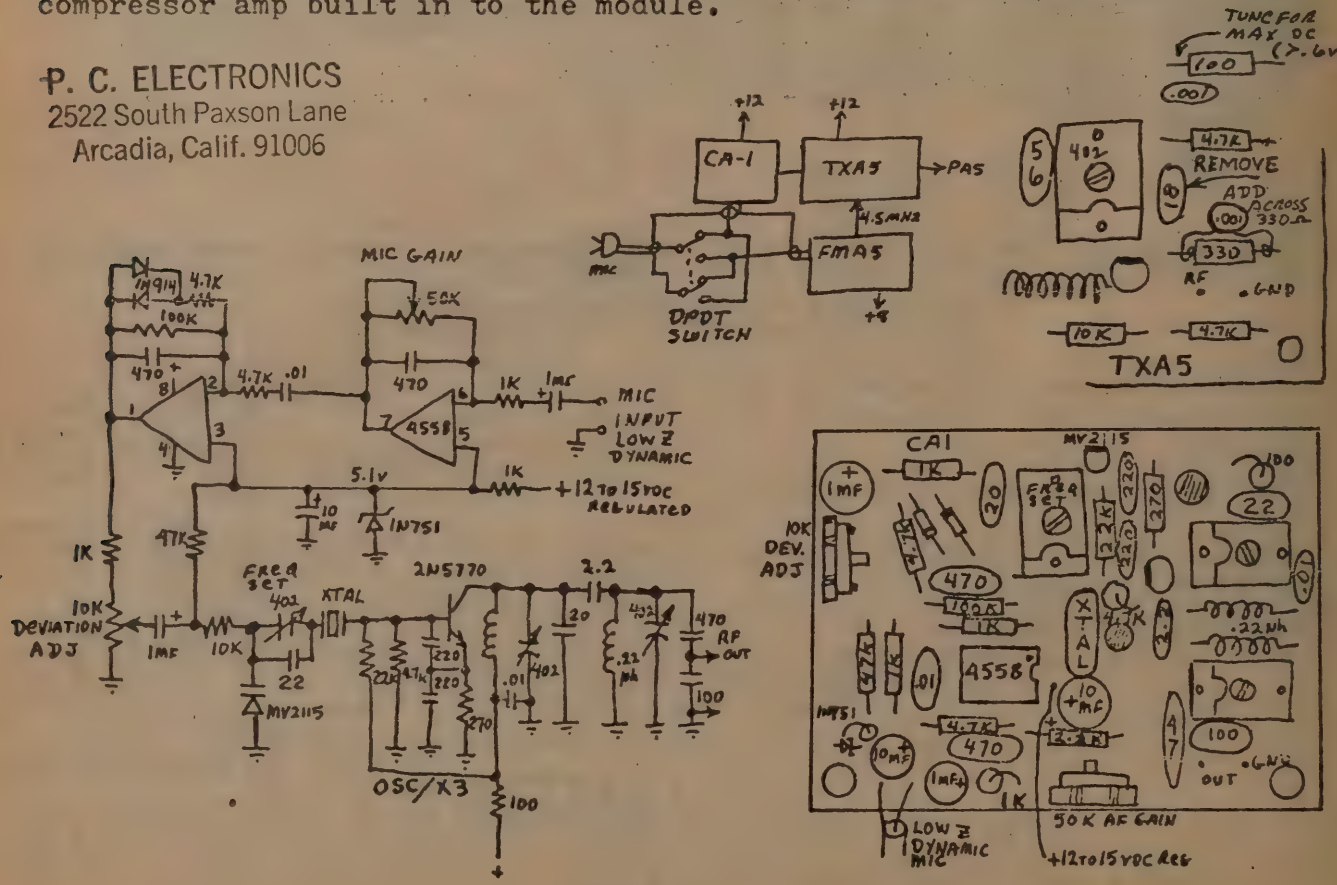
ROBOT

ROBOT RESEARCH, INC.
7591 Convoy Court
San Diego, CA 92111
(714) 279-9430

CA-1 FM CARRIER GEN

This module is designed to provide FM audio on the fast scan ATV TXA5 exciter. This is only necessary in those areas of the country that have a inband ATV repeater. These type of repeaters must use filters that are too narrow to pass the 4.5 mhz subcarrier and 3.58 mhz color subcarrier. To get around this the AM modulated video carrier is also FM modulated with sound. The standard repeater input is 439.25 MHz. A crystal can be ordered from Savoy Electronics (pob 5727, Ft. Lauderdale, Fl. 33310) for only $4.50 if specified for 2 meters..so 439.25 divided by 3 = 146.415 aproximately. Crystal type is their # 820.transmit. Any other frequency can be done the same way. The fundamental freq is 18 mHz and the module multiplies it by 3. The TXA5 xtal oscillator is changed to a doubler by removing the crystal, 18pf feedback cap to the emitter, and adding a .001 bypass cap from the emitter to ground. The board mounts directly above the TXA5 using 1"spacers and 4-40x1½" long screws. The CA-1 output has buss wire jumpers directly down to the old TXA5 crystal holes. A dpdt switch can be used if both subcarrier and on carrier sound are desired. Only one should be modulated at a time and the unused one grounded. The b+ lead from the CA-1 must be run all the way to the T/R switch to keep the common lead pickup to a minimum. The audio amp has a lot of gain to enable pickup to 20 feet and as such is very sensitive also to RF fields and lead pickup. Always use the minimum mic gain necessary. Start by setting the deviation control to minimum. Adjust the crystal freq cap to the right freq using a counter. Then adjust the deviation pot to the desired amont by talking into the mike. Nominal deviation is 5 kHz. The microphone can be any dynamic type with a impedance of up to 1K. Do not use amplified mics as there is a highgain compressor amp built in to the module.

P. C. ELECTRONICS
2522 South Paxson Lane
Arcadia, Calif. 91006



FOURTH
MEDIUM SCAN TELEVISION NEWSLETTER

It has been some time since you have received a newsletter but that does not mean that there has not been activity. The beacon on 29.150 MHz. is operating on Saturdays starting at about 1200 GMT. It broadcasts some voice announcements and about 5 minutes of medium scan television during the first ten minutes of each hour. Usually at 1800 the transmissions are cutoff since that is the time the SSTV net starts. If I am available I stand by immediately for contacts. G3WW is very regular about checking in.

The receiver design is still not progressing as well as I had hoped. It is fairly clear what needs to be done. Is there not some one that would like to take this on as a single project? The design is straight forward. It seems that the best approach is to modify an existing 6 meter front end or some sort of FM transceiver to receive the wide band FM. I am working with a 6 meter front end that I obtained from GLB. I believe that there is hope of getting it going. This will feed into some sort of an FM receiver that is on 10.7 MHz that can be broadened. Science Workshop is also working on a similar approach. Again the requirements are as follows: at least 36 KHz bandwidth at the 3 DB points. Either crystal controlled or slightly tunable at 29.150 MHz. The output from the discriminator or phase detector should be DC coupled out to the processing circuits for the analog to digital converter and the sync separator. Someone should be interested in this phase of the project.

The transmitter was easy. We are just using a FET on the VFO of any HF transceiver. The block diagram and circuit was sent to you previously.

The signal that you hear on 29.150 MHz. is a sync generator for 2 fields per second and 256 Hz horizontal line rate. The bandwidth is not as wide as 36 KHz because 16 shades of gray are being transmitted as the picture. It can be tape recorded on a cheap recorder so that you can replay it. I doubt that it can be used to reproduce a picture. It may be that if you have a good tape machine that will record hi-fidelity music that you can tape a picture. I took this into consideration when I set the standards because so many of my English friends wanted the ability to tape record the MSTV pictures. Although I have not tried it with these standards I believe that you will be able to see an interesting picture with a P7 converted SSTV monitor. Once you have recovered the sync signals they can be used to discharge the sweep capacitors that form the basis for the SSTV display. I intend to try this. Why don't one of you beat me to it?

What about a digital scan converter? I am now <u>selling at cost</u> a second memory board for the Robot 400 scan converter. It is possible to use a converted Robot with two memories to transmit and receive MSTV. There is a very serious problem however. The dynamic memories in the Robot require refreshing at a rate that is considerably faster than the MSTV rate. I realize that this can be designed around but there is a limit to what you want to do with a converted piece of equipment. The second choice is to arrange for a static buffer memory external to the Robot to receive data and transmit data at the chosen rate. The first choice was to use a S-100 board since it comes assembled or at least designed for use in S-100 microprocessor systems. This is a very good idea for transmitting but when it comes to receiving and the entire system must be reversed, it requires access to the A/D converter. Again this is possible but the conversion gets mechanically complicated with cables and power supplies and multiplexers. It is for that reason more and more thought was given to a specially designed digital scan converter that would do MSTV as well as other conversions that may come up. This scan converter should be economically priced for the home constructor.

It is hoped that MSTV will have an aspect ratio of 4 to 3 instead of 1 to 1 as is done with SSTV. This means that the horizontal resolution should be increased since the picture is wider on the TV screen. The scan converter described in this newsletter has 256 pixels horizontally and 128 lines vertically. It is capable of being loaded from any camera operating either in the US or in Europe. It will be able to display pictures on either American or European monitors. It will use S-100 computer boards which are known as 8K boards. These boards really contain 65000 bits since the 8K refers to bytes. Each byte contains 8 bits of data. It was decided to use a mother board for the S-100 bus. The addressing bus must be cut into two pieces to allow two separate time bases to operate simultaneously. It will still be possible to take data out of this special mother board and input the data into a microprocessor system if desired. It is also possible to put data into the scan converter from the computer the same way.

Let us talk about the design. I am sending along with this newsletter a tentative design. Most of the circuits have been built up in the laboratory but the entire circuit has not worked together. I am sending it along for your study and criticism. Please don't start building or asking for PC boards.

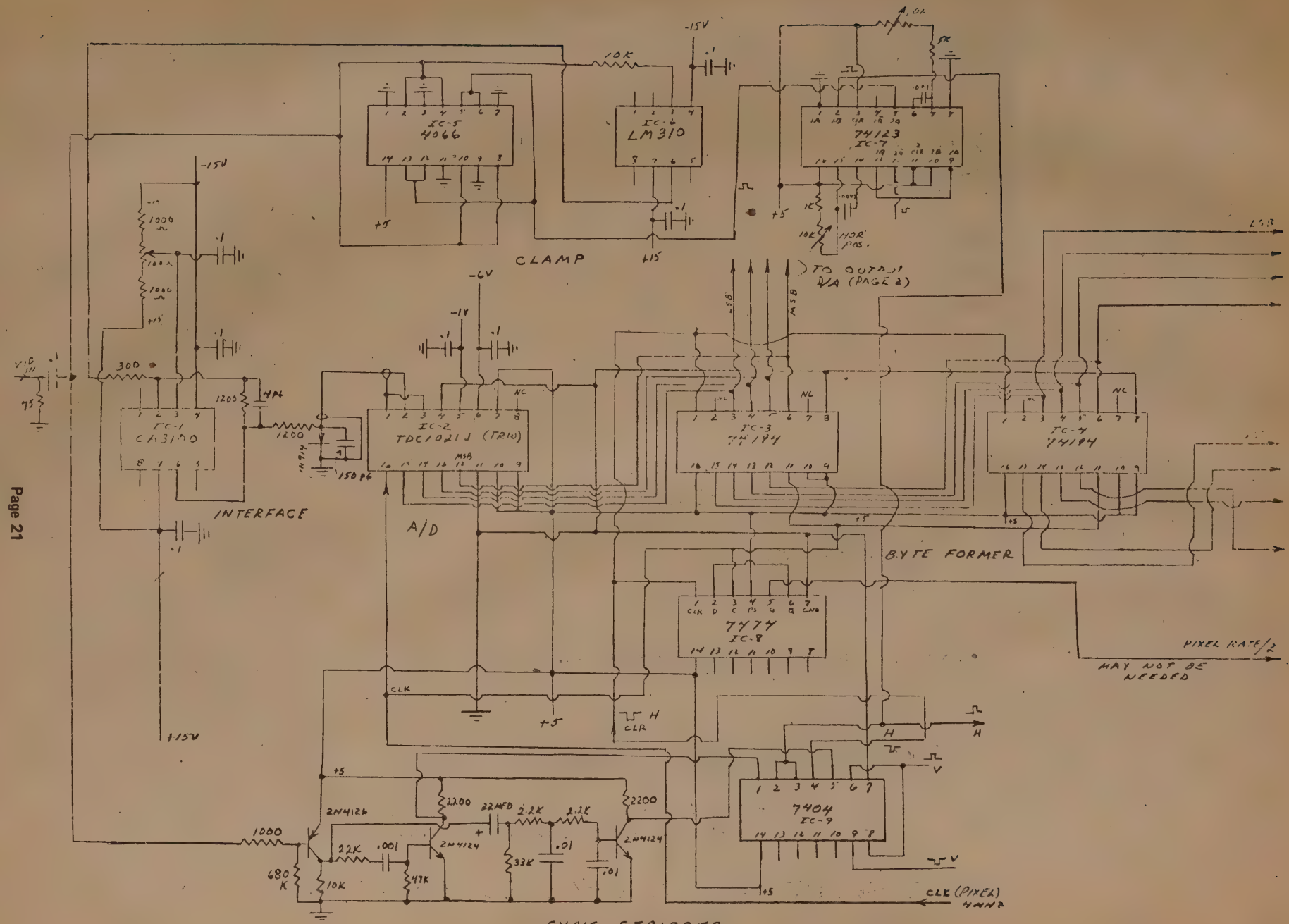
The block diagram should be studied first to understand the principles. The camera can be used for both receiving and transmitting in lieu of a FSTV sync. generator. The sync is taken off of the camera signal and used to gate the FSTV clock to load data into the memory or to display the data from the memory. It would be better if a sync. generator is used to sync the camera to the local standards. The same is true for the MSTV. The data is inputted into the memories by recovering the hor. and vertical sync signals and using them to gate the oscillator driving the address counters. The block diagram should make this clear. The principle of the simple scan converter is to load two S-100 memories while the other two memories on the other side are read out. The memory outputs are multiplexed to output to the transmitter and the monitor the proper data.

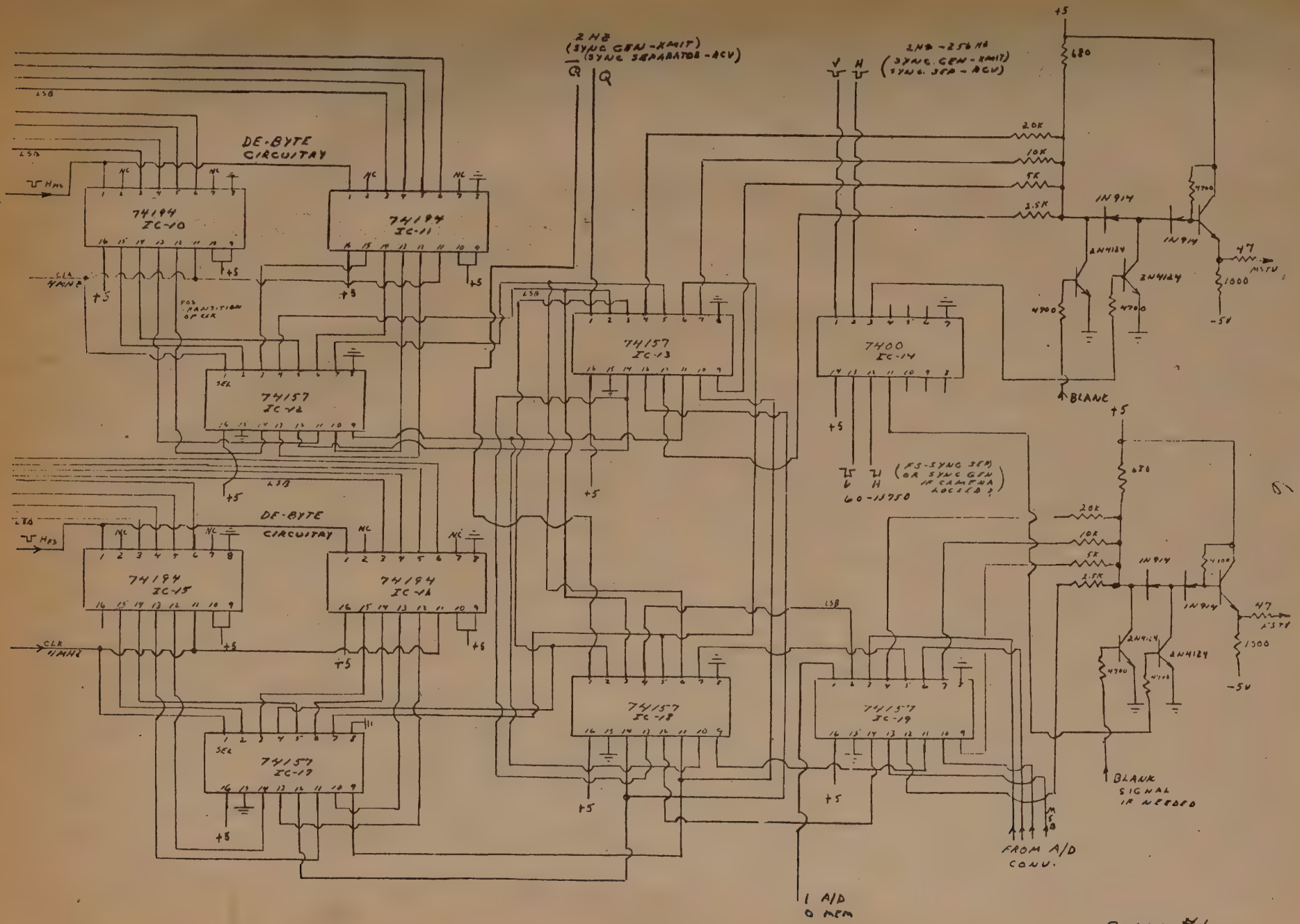
The front end of the digital scan converter is shown on both Page 1's. One of the sheets shown the most economical version which uses the A/D converter used in the Robot. This has been built and is operating. Notice that no processing of input data is performed. The secnnd page 1 contains a considerably more complicated version with clamping of the video and the use of a new TRW A/D converter which sells for $42. Either version should work and the builder can choose the one he likes best. Note that each design contains the byte former. This converts two pixels (8 bits) into the proper format to be loaded into the S-100 memory.

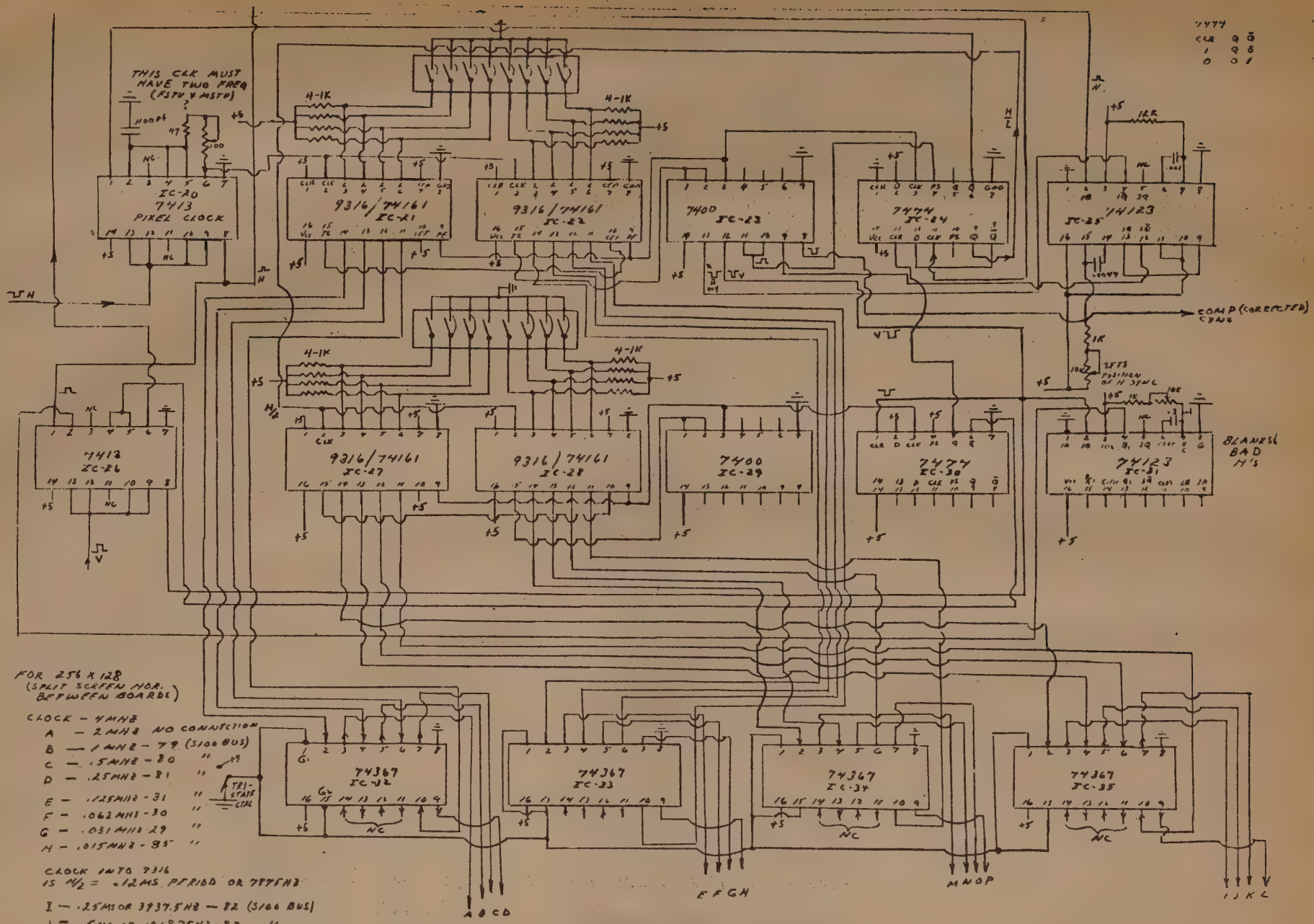
The address counters are shown on pages 2 and 3. These are programmable counters that are driven by a gated clock that is turned on by the horizontal sync pulse. The other counter counts horizontal sync pulses to get its vertical addresses. Again the output of the memory must be sent through a de-byte circuit. I forgot to mention in the previous paragraph that the A/D from the Robot does its conversion in gray code. Rather than redesign the whole design I chose to un-gray it by the use of a 7486 EX-OR circuit before it went into the byte circuit... The gray code has some advantages but the disadvantages show up when you wish to do pixel averaging etc.

I am also including a sync generator that I plan on using. It has many outputs. It is good for both American and European FSTV and SSTV. It also outputs MSTV standards for both Region 1 and 2. I built the MSTV part of for the signal that is now on 29.150 MHz as the signal source.

Well that is about it. I sure would like to hear from some of you. I still need self adressed and stamped envelopes to make the mailings. We are in the process of applying for another STA after next July. Let me know if you are interested in being on it. You must show that you are a serious experimenter to make the grade.


IC-5 4066
IC-6 LM310
74123 IC-7
CLAMP
TO OUTPUT D/A (PAGE 2)
IC-1 CA3100
INTERFACE
IC-2 TDC1021J (TRW)
A/D
IC-3 74174
IC-4 74174
BYTE FORMER
7474 IC-8
7404 IC-9
SYNC STRIPPER
PIXEL RATE/2
MAY NOT BE NEEDED
CLK (PIXEL)
MSB
LSB
-15V
+15V
+5
-6V
-12V


DE-BYTE CIRCUITRY
74194 IC-10
74194 IC-11
74157 IC-12
74157 IC-13
7400 IC-14
74194 IC-15
74194 IC-16
74157 IC-17
74157 IC-18
74157 IC-19
2N3 (SYNC GEN-XMIT) (SYNC SEPARATOR-RCV)
2N3 - 256 N3 (SYNC GEN-XMIT) (SYNC SEP-RCV)
20K
10K
5K
2.5K
680
470Ω
1000
47
IN914
2N4124
BLANK
60-11750
FROM A/D CONV.
1 A/D 0 MEM
BLANK SIGNAL IF NEEDED
BOARD #1 CONT.
PAGE 2



FOR 256 X 128 (SPLIT SCREEN HOR. BETWEEN BOARDS)

CLOCK - 4MHZ

A — 2MHZ NO CONNECTION
B — 1MHZ - 79 (S100 BUS)
C — .5MHZ - 80 "
D — .25MHZ - 81 "
E — .125MHZ - 31 "
F — .062MHZ - 30 "
G — .031MHZ - 29 "
H — .015MHZ - 85 "

CLOCK INTO 9316 IS H/2 = .12MS PERIOD OR 7777HZ

I — .25MS OR 3937.5HZ — 82 (S100 BUS)
J — .5MS OR 1968.75HZ - 83 "
K - 1.0MS OR 984.38HZ - 84 "
L - 2.0MS OR 492.19HZ - 34 "
M - 4.0MS OR 246.09HZ - 37 "
N - 8.0MS OR 123.05HZ - 87 "
O - 16.0MS OR 61.52HZ - 33 "
P - 32.0MS OR 30.76HZ - NO CONNECTION

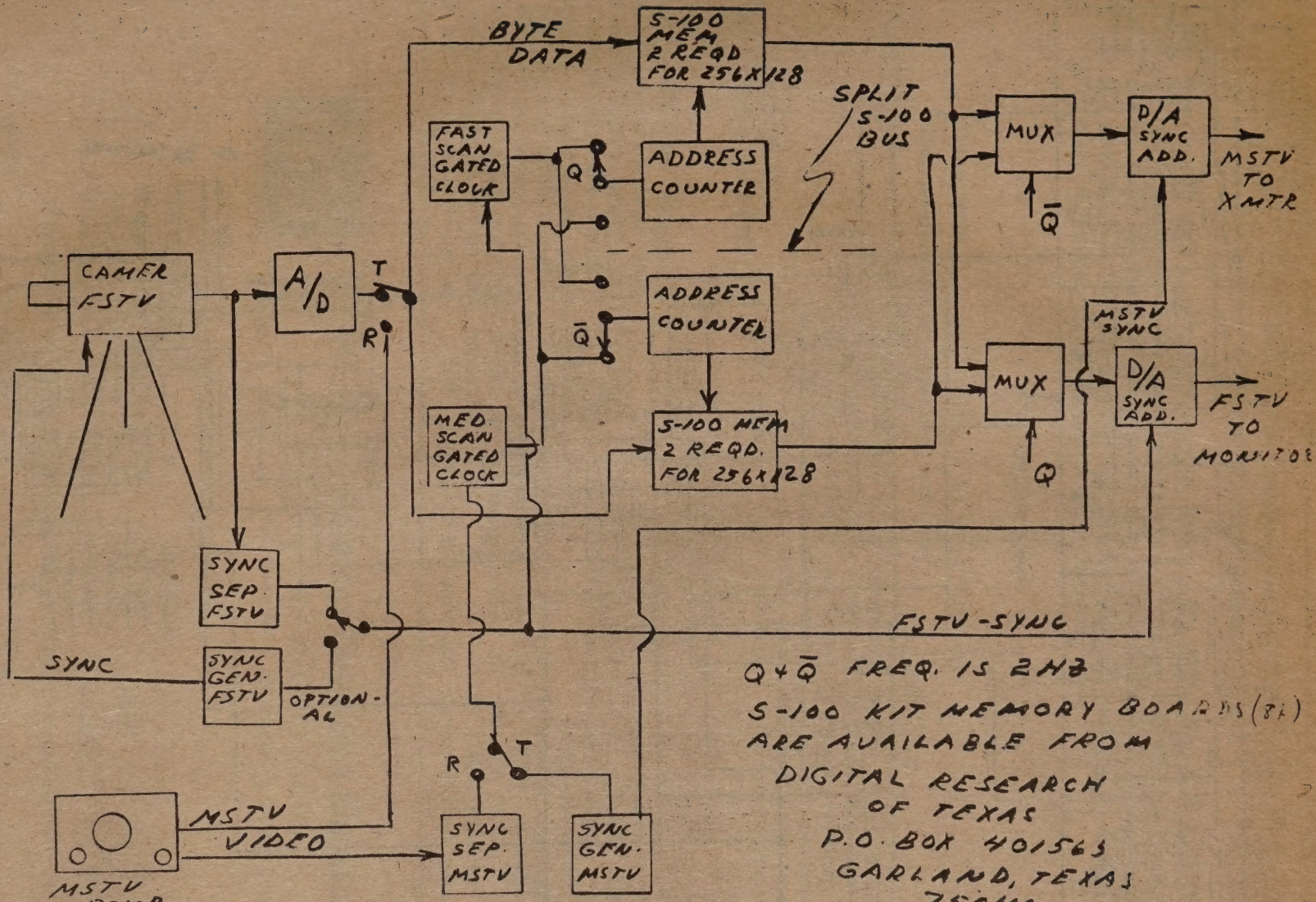
TIMING FOR S100 MEMORY BOARDS

THIS CIRCUITRY MUST BE DUPLICATED TWICE. TWO ADDRESSING GEN. ARE NEEDED TO LOAD AND READ AT SAME TIME IN OPPOSITE S-100 MEMORIES.

STANDARDS	AMERICAN	FLOOPEAR	THIS SYNC. GEN
MSTV-V- 60 Hz		50 Hz	50/60 Hz
FSTV-H- 15,750 Hz		15,625Hz	15753.75 Hz
SSTV-V- 60/4 = 15 Hz		50/3 = 16⅔ Hz	15,16⅔ Hz
SSTV-H- 15/120 = 125 Hz		16⅔/120 = .14 Hz	15/128 = .117, 16⅔/128 = .130Hz
MSTV-V- 60/30 = 2 Hz		50/25 = 2 Hz	2Hz
MSTV-H- 256 Hz		256 Hz	256Hz

UNIV. SYNC GEN.

9/27/79 RDM



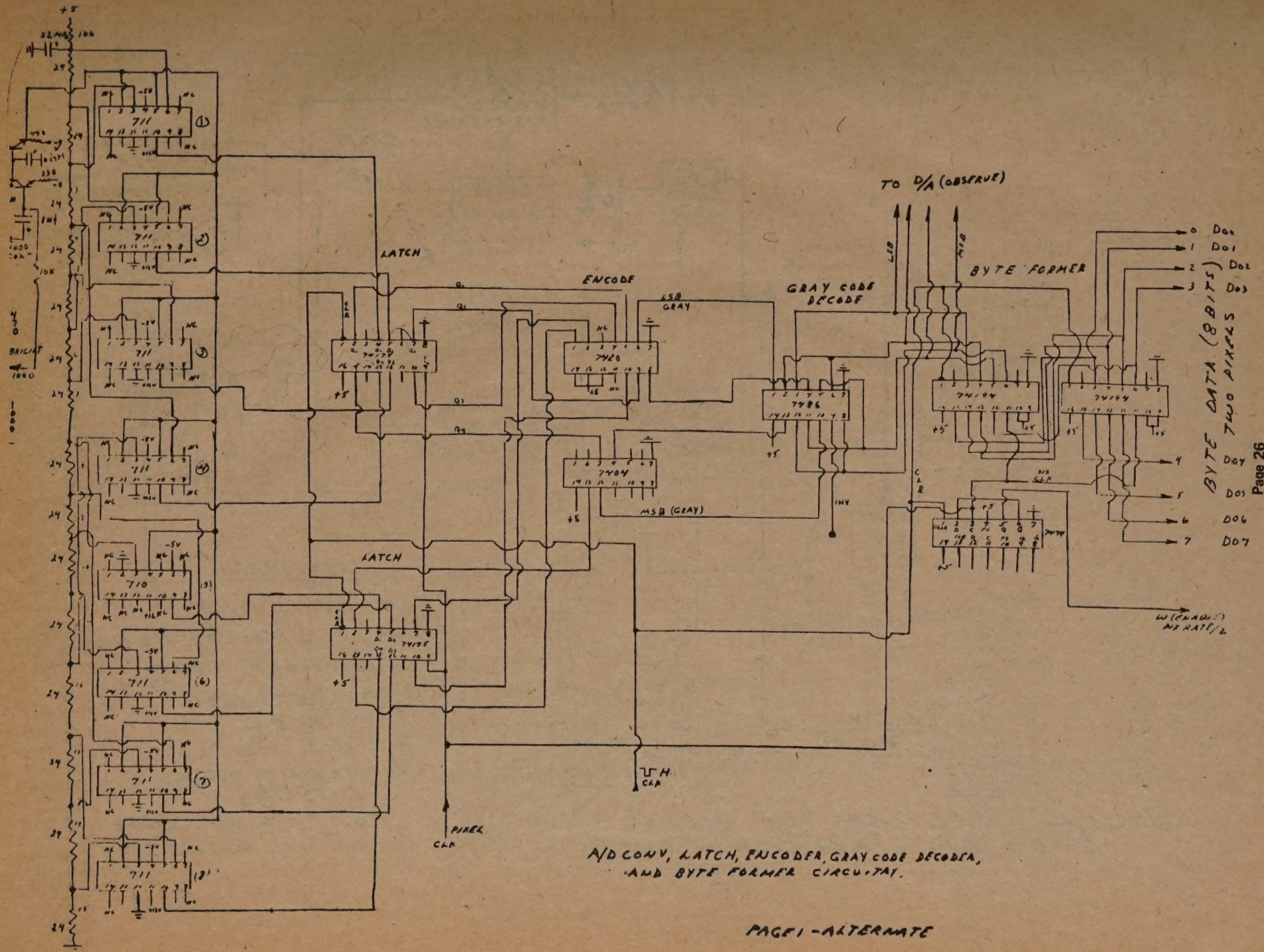
BLOCK DIAGRAM OF MSTV
S-100 DIG. SCAN CONVERTER

Q+$\bar{Q}$ FREQ. IS 2MHz

S-100 KIT MEMORY BOARDS (8K) ARE AVAILABLE FROM

DIGITAL RESEARCH
OF TEXAS
P.O. BOX 401563
GARLAND, TEXAS
75040
FOR *119.50 COMPLETE
WITH 450NS CHIPS

NOV-79, W9IIT



A/D CONV, LATCH, ENCODER, GRAY CODE DECODER, AND BYTE FORMER CIRCUITRY.

PAGE 1 - ALTERNATE

World's Most Complete Fast Scan Book

ATV IN A NUTSHELL

This 72 page book has information, theory and build it projects for a complete station. Over 120 diagrams adorn its 8 x 11 pages. Everything you need to know to build and operate your own HAM TV station. All projects are solid state. No old tube circuit! Many extras! Only $5 each plus $1.25 first class mail. Buddy pack, 2 copies for $10 post paid!

ORDER FORM

Please send _____ copies of ATV in a Nutshell

free camera alignment chart with each copy.

SLOW SCAN TELEVISION AWARDS

Amateur Television Magazine is now offering a series of award certificates for SSTV activity ranging from a basic award through several levels of difficulty to a Master Scanner award. The beginning level certificate requires the SSTV operator to have confirmed five SSTV contacts on each of any five ham bands, a total of 25 contacts. The bands used for all the levels may be any combination of the contestants choosing. Additional awards are available for working increasing numbers of stations on increasing numbers of bands.

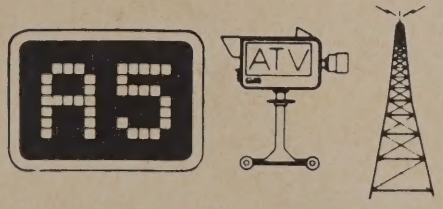
In addition to the normal frequency bands, the use of QSCAR may be used as 2 bands for any two OSCAR modes. i.e., 5 contacts via 450/144 oscar would count as 1 band for the basic certificate.

Each certificate is 8 x 11 inches and suitable for framing. Numbered consecutively, each will attest to the operators proficiency. ATV Magazine will publish the names and calls of each certificate holder as issued.

The award levels are:

5 SSTV QSO's	on each of any	5 bands,	25 contacts
6 SSTV QSO's	on each of any	6 bands,	36 contacts
7 SSTV QSO's	on each of any	7 bands,	49 contacts
8 SSTV QSO's	on each of any	8 bands,	64 contacts
9 SSTV QSO's	on each of any	9 bands,	81 contacts
10 SSTV QSO's	on each of any	10 bands,	100 contacts
25 SSTV QSO's	on each of any	10 meters,	25 contacts

Applicants should send proof on QSO and $1 for postage for each award to: SSTV MASTER SCANNERS AWARDS, PO Box 1347 Bloomington, IN 47401. Allow two weeks for processing and award preparation.



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of informative, interesting **A-5 MAGAZINE** . . . *my money is enclosed!*

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IMAGE-21

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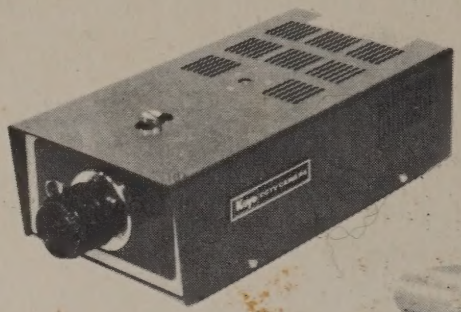

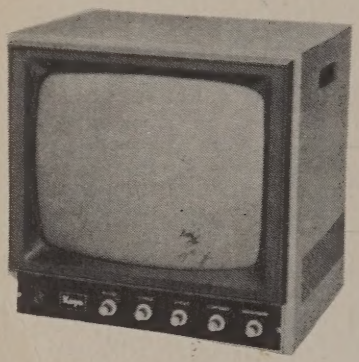

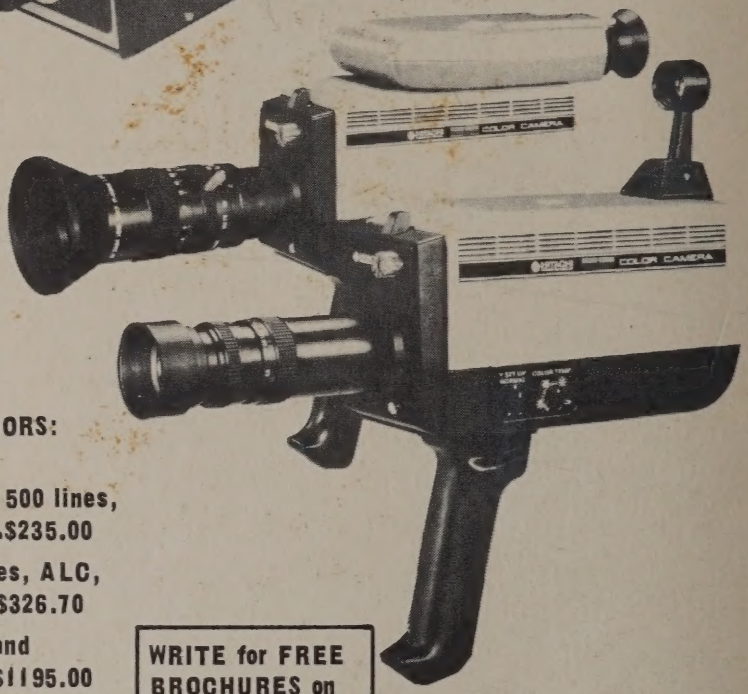

PARTIAL LISTING of CAMERAS and MONITORS:

Hitachi HV-62 2/3" general purpose camera, 500 lines, ALC, line lock, F1.6 lens.....$235.00

Hitachi HV-62S 2:1 interlace camera, 550 lines, ALC, white suppression.....$326.70

Hitachi GP-5 color camera w/6:1 zoom lens and electronic viewfinder.....$1195.00

Hitachi VM-910 9" 500 line monitor.....$216.00

Koyo TVM-90 9" 600 line monitor.....$194.00

Koyo MV-12 12" 700 line monitor.....$320.00

Sony/Image-21 custom color rcvr-monitor.....$715.00

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IMAGE-21

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